

Atty. Docket No. PIA31221/DBE/US
Serial No: 10/751,200

Remarks

The present invention relates to a method for packaging a multi-chip module, including the steps of (a) connecting connection terminals of a tape of an anisotropic conductive adhesive film, on which a circuit is patterned, to bond pads of a chip by applying a first anisotropic conductive adhesive on the tape and using a first C4 process, (b) applying an adhesive on an upper surface of the chip, folding the tape and attaching the folded tape to the upper surface of the chip, (c) forming a plurality of ball terminals on a lower surface of the tape, the ball terminals being electrically connected to the connection terminals of the tape, (d) manufacturing a plurality of individual chip scale packages by repeating the steps (a) to (c), and (e) laminating the individual chip scale packages, wherein the ball terminals of an upper individual chip scale package are electrically connected to the circuit on an outer surface of the tape which covers a lower individual chip scale package.

The Examiner previously rejected the pending Claims 1-2 and 5-12 under 35 U.S.C. § 103(a) as being unpatentable over Mukerji (U.S. Patent No. 6,300,679) in view of Crafts (U.S. Patent No. 5,492,235) in an Office Action dated June 13, 2005. In the present Office Action, the Examiner has rejected Claims 1-2 and 5-12 under 35 U.S.C. § 103(a) as being unpatentable over Mukerji in view of Crafts and Moon (U.S. Patent Application Pub. No. 2002/0164838).

None of the Examiner's cited references disclose using a C4 process to attach the bond pads of a chip to a tape comprising an anisotropic conductive adhesive film, where the tape is folded to an upper surface of the chip.

The Rejection of Claims 1-2 and 5-12 under 35 U.S.C. § 103(a)

The rejection of Claims 1-2 and 5-12 under 35 U.S.C. § 103(a) as being unpatentable over Mukerji in view of Crafts and Moon is respectfully traversed.

Mukerji relates to a method of forming a multi-chip module, including attaching a tape to the bond pads of a chip and folding the tape over the chip (see, e.g., Mukerji, FIG. 3). Mukerji is

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silent with respect to using a C4 process. Furthermore, the tape of Mukerji is not an anisotropic conductive adhesive film (ACAF). Crafts relates to a C4 process, but is silent with respect to using a C4 process to attach a tape comprising an ACAF to a chip.

Moon relates to a method of forming a multi-chip module, including attaching a tape comprising an anisotropic conductive film (ACF) to a post on a chip using a thermal compression (TC) bonding process or a thermosonic (TS) bonding process (see, e.g., Moon, paragraph [0027]). Moon further discloses using a C4 process to attach ball bonds to the outside of the tape (see, e.g., Moon, paragraph [0023]). Moon does not teach or suggest using a C4 process to attach an ACAF film to the chip.

For the Examiner to make a *prima facie* case of obviousness, “mere identification in the prior art of each element is insufficient to defeat the patentability of the combined subject matter as a whole.” *In re Kahn*, No. 04-1616, slip op. at 11 (Fed. Cir. March 22, 2006) (citing *In re Rouffet*, 149 F.3d 1350, 1355, 1357 (Fed. Cir. 1998)). Instead, the Examiner must “explain the motivation, or the suggestion or teaching, that would have led the skilled artisan at the time of the invention to the claimed combination as a whole.” *Id.* at 12. To establish the *prima facie* case, the Examiner must “explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.” *Id.*

Here, the Examiner has stated that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the packaged device of Mukerji and Crafts in accordance with the teaching of Moon because “[d]oing so would facilitate the manufacture of the semiconductor package device and increase the bonding between the chip and the pads and speed of the semiconductor device.” (see, e.g., Office Action of December 28, 2005, p. 4) The Examiner does not, however, explain why a person skilled in the art would modify the references to use a C4 process to attach a tape comprising an ACAF film to a chip. Furthermore, Moon appears to lead one away from such a combination, because Moon uses the C4 process in one step, but uses one of two different processes (TC or TS) to bond a tape comprising an ACF to a chip, thereby providing to one of ordinary skill in the art a suggestion or

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motivation to do something other than what is claimed. Thus, the Examiner has failed to make a *prima facie* case of obviousness. Therefore, the rejection of Claims 1-2 and 5-12 is improper, and should be withdrawn.

Conclusions

In view of the above amendments and remarks, all bases for rejection are overcome, and the application is believed to be in condition for allowance. Early notice to that effect is earnestly requested.

If it is deemed helpful or beneficial to the efficient prosecution of the present application, the Examiner is invited to contact Applicant's undersigned representative by telephone.

Respectfully submitted,



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